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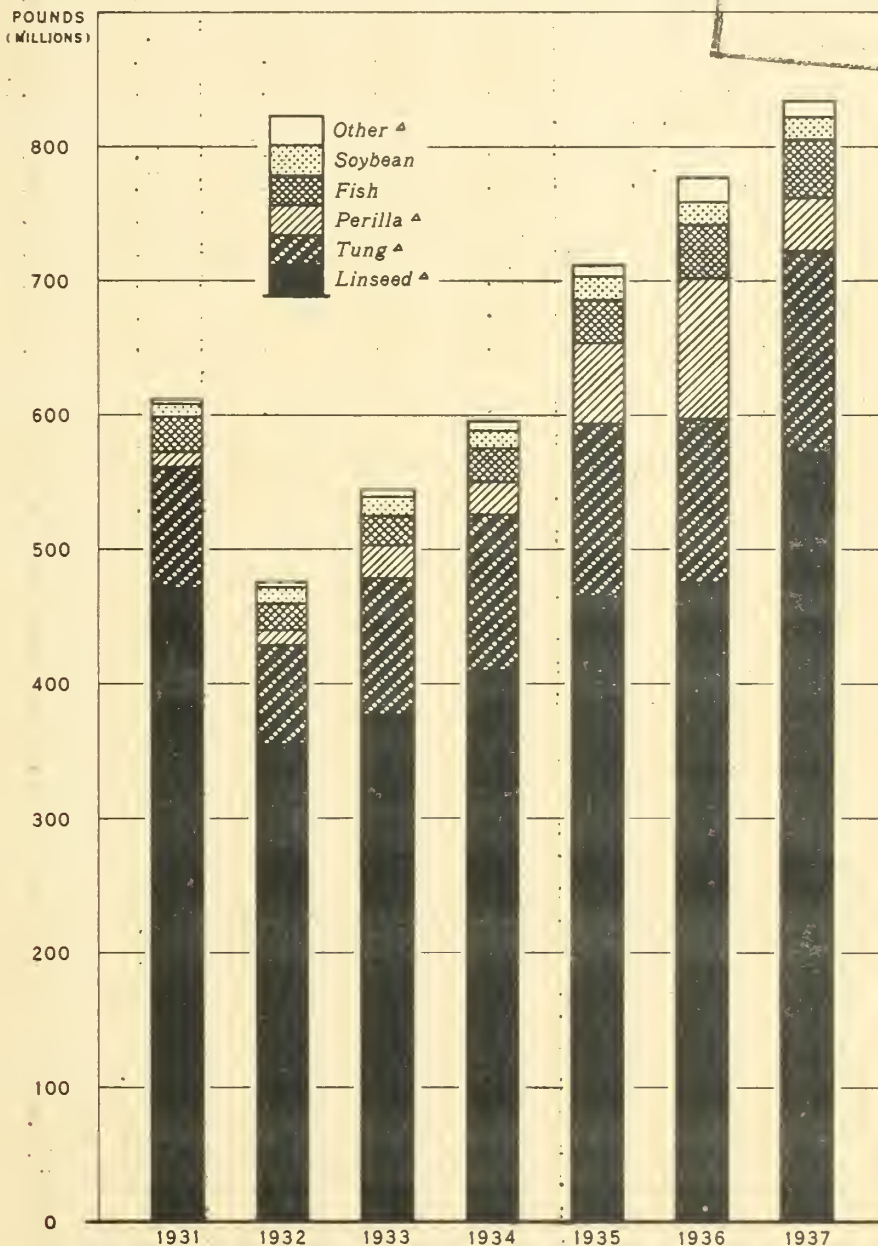


UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
WASHINGTON

MAY 17, 1938.

THE FATS AND OILS SITUATION

CONSUMPTION OF OILS BY THE DRYING INDUSTRIES
IN THE UNITED STATES, 1931-37



△ SINCE DRYING OILS ARE USED DIRECTLY AS WELL AS IN FACTORY CONSUMPTION, THESE FIGURES REPRESENT TOTAL DOMESTIC DISAPPEARANCE EXCLUDING THE SMALL QUANTITIES REPORTED BY THE BUREAU OF THE CENSUS AS USED IN SOAP, SHORTENINGS, AND MISCELLANEOUS PRODUCTS

Table 1.- Price per pound of specified fats and oils, average January - March, monthly March and April, 1937 and 1938

Fat or oil	1937			1938		
	Average:			Average:		
	Jan. -	Mar.	Apr.	Jan. -	Mar.	Apr.
	Mar.			Mar.		
	Cents	Cents	Cents	Cents	Cents	Cents
<u>Domestic prices</u>						
Butter, 92 score, N. Y.	34.8	35.8	32.9	31.7	30.3	27.7
Oleomargarine, domestic vegetable:						
Chicago	16.5	16.6	16.5	15.2	15.1	15.5
Lard, prime stean, Chicago	12.8	12.5	11.6	8.6	8.8n	8.2n
Lard, refined, Chicago	13.5	13.2	12.6	10.2	10.0	9.4
Lard compounds, Chicago	13.7	13.7	13.7	10.2	10.2	10.3
Coconut oil, edible, N. Y.	11.3	11.0	10.5	6.2	6.1	5.7
Cottonseed oil, crude, f.o.b.						
S. E. mills	10.1	9.9	9.5n	6.6	7.0n	6.9
Cottonseed oil, p.s.y., N. Y.	11.2	11.1	10.6	7.8	8.2	
Soybean oil, refined, N. Y.	12.2	12.2	12.4	9.0	9.2	8.8
Peanut oil, domestic, refined, N.Y.	13.5n	13.5n	13.5n	10.1n	10.2n	10.1
Rape oil, refined, N. Y.	11.5	11.7	12.2	12.1	12.0	11.6
Oleo oil, No. 1, N. Y.	13.9	13.4	13.1	9.5	9.2	8.9
Oleasterine, barrels, N. Y.	10.9	10.3	10.2	7.5	7.6	6.7
Corn oil, refined, N. Y.	12.9	13.0	12.9	9.7	10.2	9.7
Olive oil, edible, N. Y.	31.1n	33.3n	33.3n	28.4	26.0	25.7
Sunflower oil, refined, N. Y.	12.4n	12.2n	12.2n	---	---	---
Teaseed oil, crude, N. Y.	14.5	14.0n	10.5	8.6	8.4	7.6
Coconut oil, crude, Pacific Coast:	8.6n	8.6n	7.9	3.7	3.6	3.1
Tallow, inedible, Chicago	8.8	8.9	8.6	5.2	5.0	4.6
Grease, house, N. Y.	8.7	8.8	8.7	4.9	4.6	4.0
Palm oil, crude, N. Y.	6.8	6.6	7.0	4.2	4.1	3.8
Olive oil foots, barrels, N. Y.	11.8	12.0n	11.6n	9.1	8.9	8.6
Palm-kernel oil, denatured, N.Y.	7.8	7.4	7.1	4.2	4.1	4.0
Babassu oil, tanks, N.Y. (futures)	11.2	11.4	10.8	6.8	6.7	6.4
Sardine oil, tanks, Pacific Coast:	6.8	7.2	7.2	5.9	6.2	5.4
Linseed oil, raw, Minneapolis	9.9	10.0	10.8	9.8	9.6	9.3
Tung oil, drums, Atlantic Coast	15.1	15.4	15.3	14.7	13.3	12.5
Perilla oil, drums, N. Y.	11.6	11.6	11.9	11.0	10.6	10.6
Soybean oil, crude, f.o.b. mills	9.8	9.8	9.8	6.1	6.4	5.9
Menhaden oil, crude, f.o.b. Balto:	5.2	5.7	6.0n	5.0n	4.9n	4.7
<u>Foreign prices</u> ^{1/}						
Cotton oil, crude, naked, Hull	6.6	6.5	6.8	4.2	4.2	3.8
Copra, Resecada, Philippines	4.5	4.4	3.9	1.7	^{2/} 1.6	-
Palm-kernel oil, crude, Hull	7.5	7.2	6.6	4.6	4.3	4.2
Whale oil, crude, No. 1, Rotterdam	5.3	5.0	5.0	3.5	3.1	3.3
Tallow, beef, fair-fine, London	6.4	6.2	6.1	4.6	4.5	4.4
Linseed oil, naked, Hull	6.1	6.3	6.5	6.2	6.0	5.6

^{1/} Converted to U.S. cents per pound at current monthly rates of exchange.^{2/} Preliminary. Average for 3 weeks.

THE DRYING OILS SITUATION

BACKGROUND.- Consumption of fats and oils in the drying industries (paints and varnishes, linoleum, oilcloth, and printing inks) has increased steadily from a post-World War low of 475 million pounds in 1932 to 834 million pounds in 1937, concurrently with increased building activity. From 1932 to 1936 the use of linseed oil, while gaining steadily in absolute volume, decreased proportionately from 77 percent of the total consumption in 1932 to 61 percent in 1936. The percentages contributed by tung, fish, and soybean oils were approximately steady, the drop in the proportion of linseed oil being balanced by sharply increased use of perilla oil and small additions of such minor oils as hempseed, oiticica, and castor. The excise tax of 4-1/2 cents per pound on perilla and hempseed oils and 2 cents per pound on the seeds effective August 21, 1936, and the consequent decreased imports together with increased demands for drying oils led to sharp declines in the use of these two oils and increases in the use of linseed, tung, fish, castor, and oiticica oils in 1937, linseed oil contributing 69 percent of the total. (See FOS No. 3, May 1937, and No. 8, October 1937, for more detailed discussion.)

General situation

Although the estimated consumption of oils in the drying industries was 7 percent more in the calendar year 1937 than in 1936, a more-than-seasonal decrease in consumption occurred during the last half of the year. Estimated consumption in the first quarter of 1938 was more than one-third less than in the corresponding quarter of last year. (See table 2.)

As a result of decreased utilization, stocks of the three major drying oils, namely, linseed, tung, and perilla, were larger at the close of the first quarter of 1938 than on any reported date in the past 10 years. On March 31 stocks amounted to more than 298 million pounds compared with almost 183 million a year earlier and 198 million pounds on the corresponding date of 1932. (See table 5.)

Imports during the first quarter of 1938 showed a decided downward trend except in the case of perilla oil. (See table 4.)

Prices of all drying oils averaged lower in April than in January, and also lower than they were in April 1937. Raw linseed oil at Minneapolis averaged 9.3 cents per pound in April, compared with 10 cents per pound in January and with 10.8 cents in April last year. Most of the other oils showed similar decreases except crude soybean oil, f.o.b. mills, which averaged 5.9 cents per pound in April, compared with 5.8 cents in January and 9.8 cents per pound in April 1937.

Table 2.- Estimated consumption of fats and oils in the drying industries in the United States, 1931-38

Year	Linseed: oil 1/	Tung oil 1/	Perilla: oil 1/	Fish oil	Soybean: oil	Other: 2/	Total
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
Average -							
1931-33	400	89	16	23	12	4	544
1934-36	450	123	63	40	16	11	703
1931	471	90	11	27	9	3	611
1932	354	74	11	20	12	4	475
1933	376	102	25	22	14	5	544
1934	409	117	24	25	13	7	595
1935	465	129	60	32	18	8	712
1936	476	121	105	40	17	18	777
1937	571	151	39	44	17	12	834
1937 - Jan.-Mar. 3/	(132)	(37)	(12)	(13)	(5)	(3)	(202)
1938 - Jan.-Mar. 3/	(91)	(24)	(8)	(6)	(3)	(2)	(134)

The drying industries include paint and varnish, linoleum, oilcloth, and printing ink. During the past 6 years the paint and varnish industry has used an average of about 87 percent of the total.

- 1/ Since drying oils are used directly as well as in factory consumption, these figures represent total domestic disappearance excluding small quantities reported by Bureau of the Census as used in soap, shortenings, and miscellaneous products.
- 2/ Includes factory consumption of castor and miscellaneous oils, in 1931-33. In 1934, 3,000,000 pounds each castor and sunflower oils, and 1,000,000 pounds miscellaneous oils. In 1935, 4,000,000 pounds castor oil, 2,000,000 pounds citicica oil, and 2,000,000 pounds miscellaneous oils. In 1936, 5,000,000 pounds castor oil, 2,000,000 pounds citicica oil, and 11,000,000 pounds miscellaneous oils, probably largely hempseed. In 1937, 8,000,000 pounds castor oil, 1,000,000 pounds coconut oil, and 3,000,000 pounds miscellaneous oils, probably mostly cititica and hempseed oils.
- 3/ These data are rough estimates based largely on the relation of consumption in drying industries to total disappearance in 1937.

Linseed oil

The actual consumption of linseed oil consumed by the drying industries increased in each calendar year from 1933 to 1936, although it constituted a steadily decreasing percentage of the total utilization of oils in the drying industries. In 1937, drying use gained both in volume and proportion, the 571 million pounds being 69 percent of the total. Consumption of linseed oil, as well as of other drying oils, dropped more than seasonally in the second half of 1937, and the downward trend continued in the first quarter of 1938. Apparent disappearance from January through March 1938 was 94 million pounds compared with 136 million in the same period in 1937 and 91 million pounds in 1936.

Production of linseed oil in the calendar year 1937 from domestic and imported seed was 74 million pounds more than consumption. This difference is represented in the January 1, 1938, stocks of 191 million pounds. Stocks had increased to 223 million pounds as of March 31, 1938 compared with 138 million pounds a year earlier.

Prospective plantings of 1,112,000 acres of flaxseed in the United States indicate that acreage will be about 14 percent under 1937. Crashings of flaxseed in the first three quarters of the 1937-38 season amounted to 22 million bushels, compared with 20 million bushels in the corresponding months of the 1936-37 season.

Table 3.- Percentage consumption of fats and oils in the drying industries in the United States, 1931-38

Year	Linseed oil	Tung oil	Perilla oil	Fish oil	Soybean oil	Other	Total
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Average -							
1931-33	73	17	3	4	3	1/	100
1934-36	64	17	9	6	2	2	100
1931	77	15	2	4	2	1/	100
1932	75	16	2	4	3	1/	100
1933	69	19	5	4	3	1/	100
1934	69	20	4	4	2	1	100
1935	65	18	3	5	3	1	100
1936	61	16	14	5	2	2	100
1937	69	18	5	5	2	1	100
1937 - Jan.-Mar.	(65)	(18)	(6)	(6)	(3)	(2)	(100)
1938 - Jan.-Mar.	(66)	(13)	(6)	(4)	(2)	(2)	(100)

The drying industries include paint and varnish, linoleum, oilcloth, and printing ink. During the past 6 years paint and varnish has averaged about 87 percent of the total.

1/ Less than 1 percent.

Table 4.-Specified drying oils: Production, net imports, stocks, and apparent disappearance, annual 1935-37, and January-March, 1936-38

(Net exports are indicated by a minus sign)						
Item	Annual			Jan.-Mar.		
	1935	1936	1937	1936	1937	1938
	1/	1/	1/	1/	1/	1/
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
Linseed oil-						
Production <u>2/</u>	502.0	456.0	665.1	132.1	156.9	125.6
Net imports	1.2	- 0.2	- 0.6	- 0.2	- 0.2	- 0.1
Stocks, end of period	146.5	117.3	191.4	187.4	137.5	223.1
Apparent disappearance	470.5	485.0	590.4	91.0	136.5	93.8
Tung oil-						
Production <u>3/</u>						
Net imports	120.1	134.8	174.9	42.1	44.8	28.0
Stocks, end of period	19.0	29.0	48.5	35.2	35.2	51.4
Apparent disappearance	132.5	124.9	155.4	25.9	38.6	25.1
Perilla oil-						
Production <u>4/</u>	1.0	1.4	---	0.8	---	---
Net imports	72.3	117.9	43.6	30.7	2.2	8.4
Stocks, end of period	12.9	19.8	23.7	23.3	10.2	24.0
Apparent disappearance	64.3	112.4	39.7	21.1	11.8	8.1
Hempseed oil-						
Production	17.1	13.7	---	6.4	---	---
Net imports	0.3	---	---	---	---	---
Stocks, end of period	<u>5/</u> (8.0)	2.0	---	8.2	0.8	---
Apparent disappearance	<u>6/</u> (9.4)	<u>6/</u> (19.7)	2.0	6.4	1.3	---
Oiticica oil-						
Net imports	---	2.9	3.6	---	0.9	0.3
Total disappearance	676.7	744.9	791.1	144.4	189.1	127.3

1/ Preliminary.2/ From domestic and imported material.3/ Reported with "other oils".4/ Production is oil equivalent of imported seed.5/ Estimate based on stocks reported for Mar. 31, 1936.6/ Estimated.

Leaders (---) indicate less than 500,000 pounds or not separately reported.

Tung oil

Imports of tung oil in 1937 were the largest on record, exceeding those of 1936 by 40 million pounds. Consumption rose 31 million pounds, being stimulated by shortage of perilla oil and generally improved demand. Stocks were 20 million pounds larger at the end of the year.

In the first quarter of this year imports, amounting to 28 million pounds, were materially below the corresponding period of both 1937 and 1936, reflecting the influence of larger stocks and sharply decreased disappearance. (See tables 4 and 5.) Tung oil imports into the United States are free of duty and excise tax.

Average prices of tung oil rose sharply to above 21 cents per pound in September and October 1937 as a result of uncertainty in the oriental situation. Shipments since have been more than adequate to care for domestic needs, and stocks are considerably above average at the present time. The market price has correspondingly dropped and in March averaged only 5.5 cents higher than raw linseed oil in the New York market. Stocks on March 31 were 51 million pounds compared with 35 million pounds on the same date in 1937.

Exports of tung oil from China have been increasing in recent years, as follows: 144 million pounds in 1934, 163 in 1935, 191 in 1936, and 241 million in 1937. Fully 95 percent of China's production of tung oil is from the area of China under Chinese control, but the volume of exports during the next few months is uncertain.

This year's domestic tung nut crop will be in the neighborhood of 20 million pounds, the Department of Commerce estimates. A crop of this size would yield about 4 million pounds of oil, which is less than 3 percent of domestic consumption in 1937.

Perilla oil

Perilla oil was a minor competitor of linseed oil in the drying oil field before imports and consumption of perilla oil rose to significantly high levels in 1935 and 1936. Imports were first reported in 1913 and were less than 10 million pounds in any year prior to 1931.

Perilla oil has been and is free of import duty, but an import duty of 20 cents per bushel of 56 pounds was placed on perilla seed under the 1913 Tariff Act and removed in 1922. Under the Revenue Act of 1936, imported perilla oil is subject to an excise tax of 4-1/2 cents per pound and perilla seed 2 cents per pound. This rate on seed is equivalent to about 5.4 cents per pound on the average oil equivalent of the seed (using a conversion factor of .37). Under the present rates only negligible imports of seed may be expected in view of the differential. A change in the rate to 1.38 cents per pound on the seed, as proposed in the Senate amendment to the 1938 Revenue Act now pending in Congress would reduce the rate to approximately 3.7 cents on the oil equivalent, which is 0.8 cent below the rate on the oil, and this is believed to be sufficient differential to encourage imports of seed and discourage imports of oil under present price and demand conditions in the domestic market.

Table 5.-Stocks of specified drying oils, United States, by quarters, 1929, 1932-38

Date	Linseed oil	Tung oil	Perilla oil	Total	Soybean oil 1/
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
1929					
Mar. 31	181.9	24.6	---	206.5	9.5
June 30	123.5	18.6	---	142.1	12.0
Sept. 30	103.2	29.4	---	132.6	11.7
Dec. 31	140.9	29.4	---	170.3	15.6
1932					
Mar. 31	166.5	27.3	4.6	198.4	23.9
June 30	117.0	29.3	6.2	152.5	23.0
Sept. 30	97.5	30.8	6.7	135.0	16.7
Dec. 31	121.8	30.9	6.1	158.8	16.6
1933					
Mar. 31	140.5	36.6	4.4	181.5	16.9
June 30	86.5	29.2	5.2	120.9	11.4
Sept. 30	99.6	34.4	5.6	139.6	10.9
Dec. 31	157.7	41.8	2.7	202.2	13.5
1934					
Mar. 31	160.8	36.2	4.8	201.8	15.9
June 30	128.4	26.7	10.9	166.0	16.6
Sept. 30	109.4	23.7	7.0	140.1	14.9
Dec. 31	113.7	31.5	3.8	149.0	19.0
1935					
Mar. 31	125.4	21.4	6.3	153.1	17.8
June 30	104.9	12.9	18.3	136.1	22.8
Sept. 30	106.3	19.4	22.8	148.5	14.2
Dec. 31	146.5	19.0	12.9	178.4	31.1
1936					
Mar. 31	187.4	35.2	23.3	245.9	49.2
June 30	140.8	38.5	33.7	213.0	57.6
Sept. 30	99.7	44.8	38.7	183.2	39.2
Dec. 31	117.3	29.0	19.8	166.1	34.4
1937					
Mar. 31	137.5	35.2	10.2	182.9	40.6
June 30	142.4	43.6	14.4	200.4	48.1
Sept. 30	142.8	58.9	18.3	220.0	36.0
Dec. 31	191.4	43.5	23.7	263.6	62.5
1938					
Mar. 31	223.1	51.4	24.0	298.5	80.5

1/ Crude and refined converted to crude, using 0.94.

Compiled from Bureau of the Census, Animal and Vegetable Fats and Oils.

Annual imports of perilla oil amounted to less than 10 million pounds until 1931, then rose steadily to a peak of 118 million pounds in 1936. All of the imports in this latter year came in prior to August 21, the effective date of the excise taxes.

An advance in average market price, at New York, in February 1937, compared with prices from January through June 1936, brought a small volume of imports, the first under the excise tax. Maintenance of prices at around February 1937 or higher levels in the remainder of the year resulted in imports of 44 million pounds, a larger amount than imported in any year prior to 1935. In the last quarter of 1937 consumption fell off sharply to less than 2 million pounds as a result of a rise in price and decreased demand. Stocks had risen to 24 million pounds by December 31, 1937, and were still at this volume at the end of March.

Low prices of soybean oil are favorable for the use of perilla oil since they are used in combination.

Imports of perilla seed were reported with sesame seed from 1922 to 1930 and are believed to have been very small. In 1931-32 no imports of perilla seed were reported. Imports rose from 292,000 pounds (oil equivalent) in 1933 to 1,380,000 pounds in 1936, which is very small in proportion to imports of perilla oil in the same period. Only 74,000 pounds of perilla seed (oil equivalent) were imported in 1937 since the existing taxes strongly discourage seed imports.

According to trade estimates, the world crop of perilla seed in 1937 was about 30 percent below that of the preceding year.

Hempseed oil

Less than 500 pounds of hempseed oil have been imported for consumption since the excise tax of 4-1/2 cents per pound (in addition to the tariff rate of 1-1/2 cents per pound) became effective in 1936. Small amounts of hempseed have been imported, but none is believed to have been crushed in view of the excise tax of 2 cents per pound, which is about 8.3 cents per pound on the oil equivalent. Imported hempseed is used largely for birdseed.

Stocks of hempseed oil apparently have been exhausted since October 1937, and no significant use of this oil may be expected under existing import restrictions.

Oiticica oil

Oiticica oil is one of the most recent additions to the supplies of commercial drying oils. Imports were first reported in 1936. In 1937 they amounted to a little more than 3-1/2 million pounds or about 1 million pounds larger than in 1936. The largest volume arrived in the last quarter of 1937 in response to prices as high as 17.6 cents per pound (New York) in October. Prices have since steadily dropped and only 300,000 pounds were imported in the first quarter of 1938. There is no import duty and no excise tax on oiticica oil.

The potential supply of oiticica oil in Brazil is said to be very large. ^{1/} Though considerable experience has been gained during the past year in the use of oiticica oil as a substitute for tung oil, it is not yet fully accepted as such. Many hold the view that unless there is an adequate proportion of tung oil present, the durability and general chemical resistance of the varnish is definitely impaired. Some authorities suggest that there should not be more than 30 percent of oiticica oil to 70 percent tung oil in any given varnish, but a considerably higher proportion can be used when dealing with varnishes made from the so-called 100 percent phenolic resins. ^{2/} The commercial development of the oil is under some handicap owing to such physical obstacles as uncertain labor conditions, transportation, etc., in Brazil where the oil is produced.

Brazil placed two new oil-crushing plants in operation during 1937 and it is reported that another is planned for 1938. Exports of oiticica oil from Brazil were small in 1937 because of excessive rains and poor crop conditions. ^{3/} Reports indicate that this year's crop is in excellent condition and the outlook is for substantial exports in 1938-39.

Fish oils

In 1937 the use of refined fish oil by the drying industry amounted to or slightly larger volume than in either 1935 or 1936. But, in relation to total drying oils used, the share contributed by fish oils was about the same - 5 percent.

Menhaden and sardine oils are the fish oils most used. Inasmuch as fish oil films have elasticity as well as adhesion, durability, and wetting properties, it seems probable that the technique of refining and handling them will be still further developed. Refining methods now used make the odor much less objectionable than formerly.

In view of the upturn in market prices of fish oils in the first quarter of 1938, at the same time that prices of linseed, tung, perilla, and oiticica oils have been dropping, it is probable that purchases of fish oils by the drying industry have not been large. Unless current price trends are reversed there seems to be no reason to expect consumption of fish oils by the drying industries to exceed the 1937 proportion of total utilization.

Soybean oil

As in 1936, about 17 million pounds of soybean oil were utilized by the drying industries in 1937. This amounted to 2 percent of the total consumption of drying oils used. In view of reduced use of perilla oil and decreased demand for drying oils in general, consumption of soybean oil by the drying industries may be materially lower in 1938.

^{1/} Hausman, M. J. American Ink Maker, 15:16-19, January 1937.

^{2/} Oil and Soap, 15:45-46, February 1938.

^{3/} Oil, Paint, and Drug Reporter, 133:37, Feb. 26, 1938.

Castor oil

"Synourine", made from castor oil, is being increasingly used in the drying industry, consumption rising from 2 million pounds in 1933 to 8 million in 1937. More than 13 percent of all castor oil used in this country was utilized by the drying industry. Since "synourine" oil is used chiefly as a substitute for tung oil, and the cost of preparation is high, comparatively small amounts probably will be used in the drying industries as long as supplies of tung oil are available at relatively low prices.

The excise taxes of 1936

The excise tax of 4-1/2 cents on hempseed and perilla oils and 2 cents on hempseed and perilla seed, effective August 21, 1936, was in addition to import duty of 1-1/2 cents per pound on hempseed oil, the other items being on the free list. (See FOS-3, table 12.)

The effect of the excise tax has been to eliminate all but very small imports of hempseed oil and perilla seed, to eliminate all imports of hempseed except small quantities which are still imported for purposes believed to be other than crushing, and to discourage imports of perilla oil, which, however, have remained at higher levels than prior to 1935. For other drying oils, the effect has been to encourage imports of tung oil, citicica oil, and flaxseed, upon which no excise taxes were imposed, and to stimulate utilization of fish and castor oils in the drying industry.

Proposals to reduce excise taxes on drying oil seeds

H.R. 9632, the 1938 Revenue Bill, which has been passed by the Senate and the House includes a provision reducing the rate of excise tax on imported hempseed, perilla seed, and sesame seed from 2 cents per pound to the following:

Hempseed,	1.24 cents per pound.
Perilla seed,	1.36 cents per pound.
Sesame seed,	1.16 cents per pound.

The rates on rapeseed and kapok seed were left unchanged at 2 cents per pound.

On May 16 the bill was ready to be sent to the President for signature.

The proposed reduction would change the rate on the oil equivalent of perilla seed from about 5.4 cents to about 3.7 cents per pound, and of hempseed from about 8.3 cents to about 5.2 cents per pound. This would make the rate on the oil equivalent of both seeds approximately 0.8 cent lower than the rate on the corresponding oils (including the tariff rate on hempseed oil) which compares with a difference of about 1 cent per pound in the case of linseed oil and flaxseed. The effect of this reduction would be to encourage imports of the oilseeds and discourage imports of the oils, the exact effect being dependent upon consideration of price, cost of shipping, crushing, etc., at a specific time. The immediate effect under present circumstances would probably be nil as far as hempseed and hempseed oil are concerned, but would encourage imports of perilla seed.

Some of the less well known drying oils which are receiving attention as possibly worthy of further development are chia seed oil; petroleum-type drying oils; grapeseed oil; walnut oil; tobacco-seed oil; lumbang and soft lumbang oil from the Philippine and Hawaiian Islands; raisin seed oil, and safflower oil.

Plastic and cold water paints

Casein, resins, and other non-oil materials have been given wide publicity as fat and oil conservers. This is particularly true in Germany, where research has been extensive.

According to the Bureau of the Census, production of water paints, calcimines and plastic paints, dry or paste, by 53 identical manufacturers gained only from 137 million pounds in 1931 to 142 million in 1935, and had dropped to 128 million pounds in 1937. Calcimines accounted for 79 million pounds of the 1937 total.

Table 6.- Specified drying (and semi-drying) oils and oilseeds: Imports for consumption, 1933-38

Date	Linseed oil	Flax- seed	Hemp- seed oil	Hempseed 1/	Perilla oil	Perilla seed	Tung oil	Citricia oil
	1,000 lb.	1,000 bu.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.	1,000 lb.
1933	9,375	13,825	60	4,538	22,776	789	113,760	-
1934	2,781	14,170	413	12,981	25,164	2,181	110,007	-
1935	2,232	17,560	340	116,682	72,323	2,733	120,059	-
1936 2/	760	15,365	1	62,911	117,903	3,742	134,330	2,392
Jan.1-Aug.20			-	62,814	117,903	3,742		
Aug.21-Dec.31			-	96	0	0		
1937 3/	402	28,032	0	477	43,591	200	174,835	3,631
Jan. - Mar.	51	8,950	0	202	2,211	0	44,753	994
Apr. - June	200	8,604	0	260	15,927	200	51,244	717
July - Sept.	53	5,325	0	15	13,124	0	60,187	687
Oct. - Dec.	98	5,153	0	-	7,328	0	18,700	1,234
1938 3/								
Jan. - Mar.	50	4,719	0	0	8,421	-	28,046	307

1/ Although available data do not provide conclusive evidence, it seems probable that appreciable amounts of imported hempseed have not been crushed for oil except during the short period between 1933 and August 1936.

2/ The excise tax of 2-cents per pound on hempseed, perilla seed, and 4-1/2 cents per pound on perilla oil became effective August 21, 1936.

3/ Preliminary.

Leaders (---) indicate less than 500 pounds or not separately reported.

Table 7.- Flaxseed: Acreage, production, yield per acre, seed requirements, net trade, stocks, and crushings, 1920-37

Year	Acreage		Average yield per acre	Seed requirements for following year	Stocks, July 1		Year beginning July 1		Crushings		Total supply		Total accounted for		Balance	
	acres	bu.		bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.	bu.
1920	1,745	1,647	10,900	6.6	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1921	1,180	1,143	8,107	7.1	597	13,630	1,806	2,384	1,490	5,680	23,504	27,417	25,488	1,929		
1922	1,125	1,113	10,520	9.5	1,079	25,006	887	185	315	1,387	31,062	36,913	35,639	1,274		
1923	2,045	2,015	16,563	8.2	1,864	19,577	2,002	140	1,356	3,498	36,202	39,338	39,922	- 284		
1924	3,570	3,535	31,220	8.8	1,633	13,419	1,209	141	506	1,856	40,724	46,495	46,330	165		
1925	3,100	3,022	22,334	7.4	1,551	19,354	2,256	617	1,100	3,973	38,037	45,361	44,301	1,360		
1926	2,923	2,736	18,531	6.8	1,491	24,224	2,707	1,304	702	4,713	40,582	47,468	47,723	- 255		
1927	2,819	2,762	25,174	9.1	1,430	18,112	3,490	1,445	715	5,650	43,243	48,936	48,843	93		
1928	2,702	2,611	19,118	7.3	1,738	23,494	3,034	781	355	4,170	39,595	46,782	46,352	430		
1929	3,363	3,049	15,924	5.2	2,317	19,652	3,605	434	980	5,019	35,504	40,595	41,043	- 448		
1930	4,466	5,780	21,673	5.7	1,959	7,813	2,328	433	461	3,222	27,054	32,708	31,493	1,212		
1931	3,724	2,431	11,755	4.8	1,422	13,849	1,198	802	483	2,483	23,700	28,087	28,022	65		
1932	2,691	1,988	11,511	5.8	990	6,213	1,459	901	540	2,900	17,370	20,324	20,460	164		
1933	1,812	1,341	6,904	5.1	871	17,901	854	960	286	2,100	23,006	26,905	26,390	515		
1934	1,588	995	5,661	5.7	1,278	15,332	1,421	646	446	2,513	20,720	23,506	24,179	- 673		
1935	2,392	2,096	14,520	6.9	1,369	15,388	1,464	344	373	2,181	26,544	32,089	31,244	845		
1936	2,548	1,126	5,273	4.7	708	26,096	2,222	743	366	3,331	30,340	34,700	34,387	313		
1937	1,302	924	6,974	7.5		2,484		630	225	3,339						

Continued -

Table 7.- Flaxseed: Acreage, production, yield per acre, seed requirements, net trade, stocks, and crushings, 1920-37 - Continued

- 1/ Factory and warehouse stocks of imported and domestic flaxseed in the hands of crushers and held by importers and exporters, from Bureau of the Census, Animal and Vegetable Fats and Oils.
- 2/ Market (commercial) stocks of domestic flaxseed in store in public and private elevators in 41 markets and flaxseed afloat in vessels or barges, in harbors of lake and seaboard ports. Does not include flaxseed in transit either by rail or water, stocks in hands of crushers, or elevators attached to crushers.
- 3/ Estimated by the Bureau of Agricultural Economics. These are farm and country elevator stocks as indicated by flaxseed movement to principal markets (Minneapolis, Duluth, and Milwaukee) from July 1 to beginning of marketing of new crop.
- 4/ As crushings, seed for following year, and stocks at end of year.
- 5/ Balance unaccounted for at end of year.
- 6/ Preliminary.

Compiled as follows:

Acreage, production, yield per acre, and seed requirements from the Division of Crop and Livestock Estimates.

Trade figures from Foreign Commerce and Navigation of the United States, and June issues of the Monthly Summary of Foreign and Domestic Commerce of the United States.

Crushings from Bureau of the Census, Animal and Vegetable Fats and Oils.

FLAXSEED: PRODUCTION (OIL EQUIVALENT), NET IMPORTS OR EXPORTS OF FLAXSEED AND OIL, AND TARIFF RATES, UNITED STATES, 1890-1937

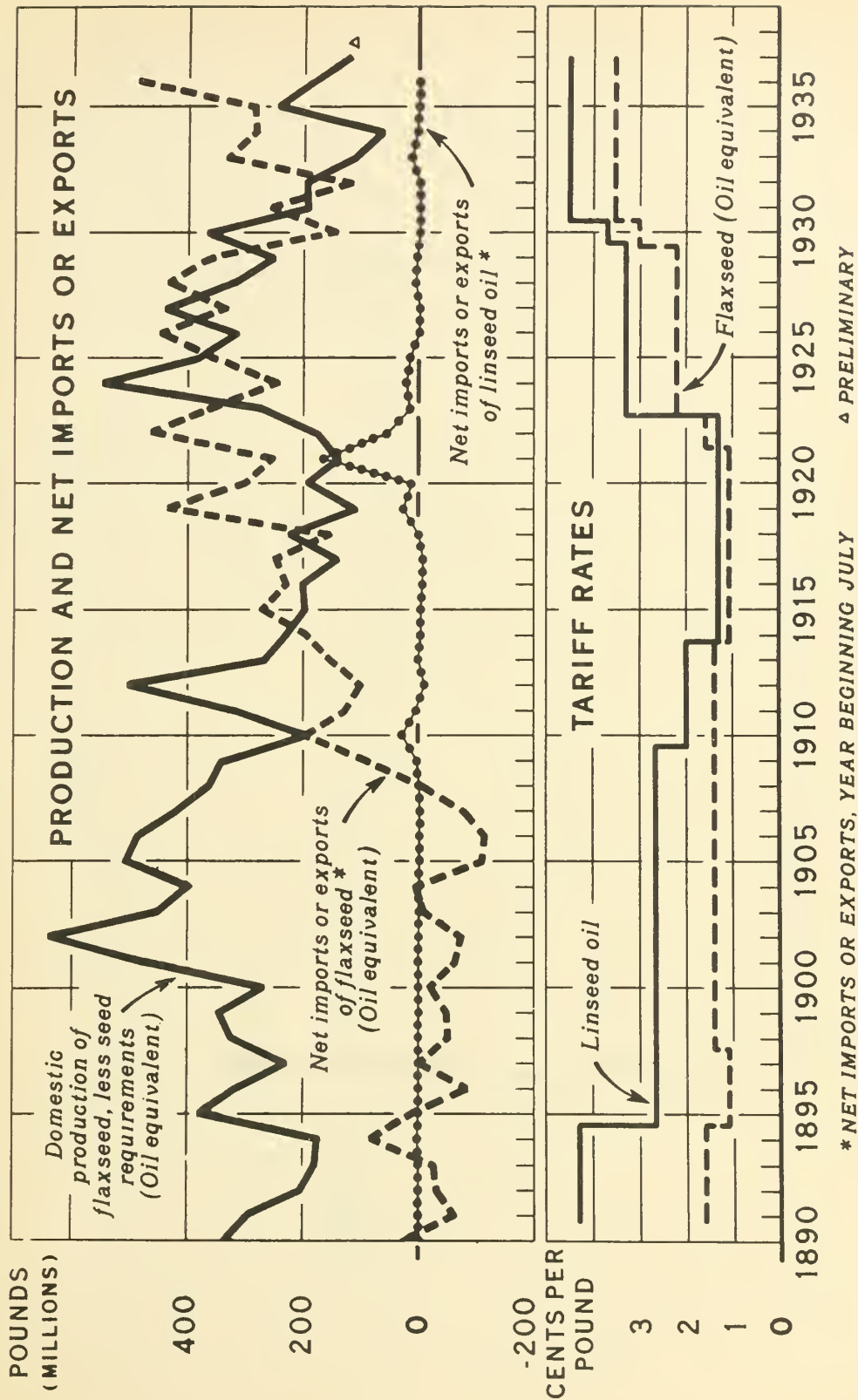


FIGURE 1.- WITH THE EXCEPTION OF A SHORT PERIOD IN 1921 AND 1922, THE TARIFF RATES HAVE FAVORED IMPORTS OF FLAXSEED RATHER THAN IMPORTS OF FOREIGN-CRUSHED LINSEED OIL.

PRICES OF LINSEED, TUNG, AND PERILLA OILS IN SPECIFIED LOCALITIES, 1935 TO DATE

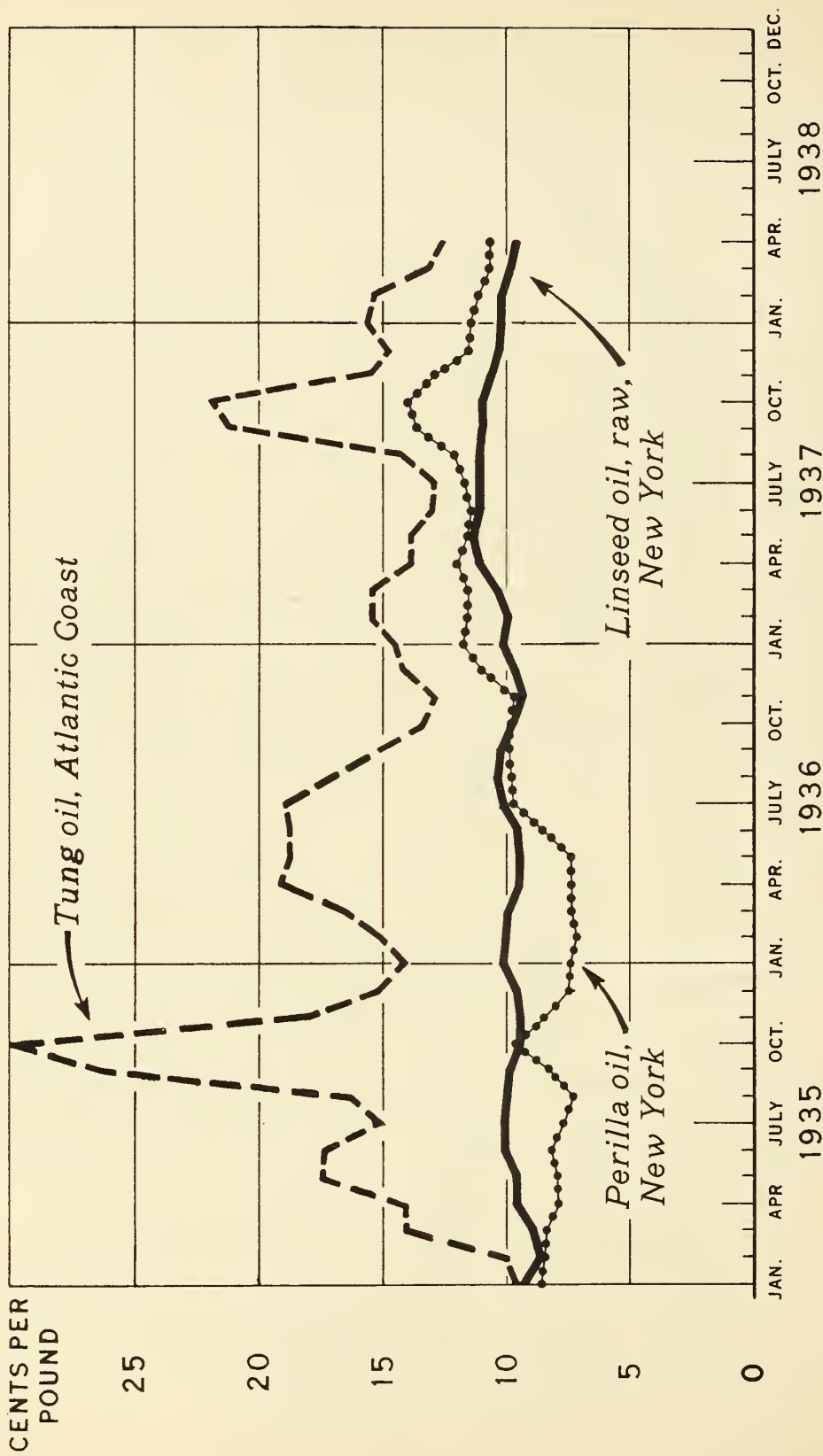


FIGURE 2

Table 8.- Flaxseed crushed in the United States, 1930-33

Year	: Year	:	:	:	:
	: beginning	: Jan.-Mar.	: Apr.-June	: July-Sept.	: Oct.-Dec.
	: July	:	:	:	:
	: 1,000 bu.	: 1,000 bu.	: 1,000 bu.	: 1,000 bu.	: 1,000 bu.
1930	: 27,054	: 7,966	7,270	5,837	7,391
1931	: 23,700	: 6,571	7,205	7,610	7,113
1932	: 17,370	: 5,393	3,534	3,739	4,998
1933	: 23,006	: 5,365	4,263	6,074	6,760
1934	: 20,720	: 5,156	5,016	4,293	4,569
1935	: 26,544	: 5,754	6,104	5,998	8,224
1936	: 30,340	: 7,094	5,163	4,862	6,931
1937 <u>1/</u>	:	: 3,175	10,372	7,666	7,754
1938 <u>1/</u>	:	: 6,461			

1/ Preliminary.

Computed from Bureau of the Census, Animal and Vegetable Fats and Oils.

Table 9.- Flax and perilla seed, linseed and perilla oils: Tariff rates as established by Tariff Acts of 1894, 1897, 1909, 1913, 1921, 1922, and 1930, and excise taxes established by Revenue Act of 1936

	Rate of duty established by Act and equivalent on average oil yield, effective -							Excise tax effective
	Aug. 1, 1894	July 29, 1897	Aug. 6, 1909	Oct. 4, 1913	May 28, 1921	Sept. 22, 1922	June 18, 1930	Aug. 21, 1936
Oilseed and oil								
Flaxseed -								
Established rate	20¢ per bu.	25¢ per bu.	25¢ per bu.	20¢ per bu.	30¢ per bu.	56¢ per bu. 1/	65¢ per bu.	---
Equivalent on average oil yield	8.2¢ per gal.	10.5¢ per gal.	10.5¢ per gal.	8.2¢ per gal.	12.0¢ per gal.	3.0¢ per lb. 2/	3.5¢ per lb.	---
Linseed oil								
Established rate	20¢ per gal.	20¢ per gal.	15¢ per gal.	10¢ per gal.		3.7¢ per lb. 3/	4 1/2¢ per lb.	---
Perilla seed -								
Established rate			25¢ per bu.	20¢ per bu.	Free	Free	Free	2¢ per lb.
Equivalent on average oil yield			1.2¢ per lb.	0.8¢ per lb.	Free	Free	Free	5.4¢ per lb.
Perilla oil			25% ad val. 4/	Free	Free	Free	Free	4 1/2¢ per lb.

1/ Original rate 40 cents; increased by Presidential Proclamation effective June 13, 1929.

2/ Under original rate, 2.2 cents per pound.

3/ Rate increased from 3.3 cents per pound by Presidential Proclamation effective July 25, 1929.

4/ As an expressed oil, n.s.p.f.

The Tariff Acts state specifically that the rate applies to a bushel of 56 pounds of flaxseed and of perilla seed.

Table 10.- Price per pound of specified drying oils, average 1934-37,
by months, 1936-38

Year	: Linseed oil, : raw : Minne- : apolis:	: Tung : oil, : drums, : New : York	: Perilla: : oil, : drums, : Atlantic : Coast 1/ : N. Y.	: Soybean: : oil, : crude, : f.o.b.: : mills	: Citicica: : oil, : N. Y.	: Hemp-: : seed : oil, : crude, : f.o.b.: : N. Y.	: Menhaden: : oil, : crude, : f.o.b.: : Balto.	: Sardine : oil, : crude, : Pacific : Coast
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
1934	9.0	9.4	8.9	9.0	6.0	-	-	2.7
1935	8.3	9.4	17.0	8.2	8.1	2/16.5	8.2	4.6
1936 -	9.5	9.8	16.1	12.1	7.5	12.6	8.9	4.5
Jan.-June:	9.2	9.8	17.1	7.5	6.8	13.3	8.4	6.9
July	9.3	10.1	18.9	9.7	7.9	14.8	8.6	4.0n
Aug.	10.1	10.3	16.5	9.8	8.0	13.2	9.5	4.2n
Sept.	9.9	10.2	14.4	9.9	8.2	11.6	9.6	4.4n
Oct.	9.7	9.7	13.5	9.8	8.0	10.4	9.6	4.6
Nov.	9.2	9.4	13.0	9.7	8.0	10.2	9.6	4.9
Dec.	9.5	9.7	14.3	10.9	9.1	10.9	9.8	5.5
1937 -	10.3	10.8	15.7	12.1	8.1	12.9	-	6.0
Jan.	9.3	10.2	14.6n	11.7	9.8	11.6	-	6.4
Feb.	9.3	10.0	15.4	11.6	9.9	11.8	-	6.9
Mar.	10.0	10.4	15.4	11.6	9.8	12.0	-	7.2
Apr.	10.8	11.2	13.8	11.9	9.8	12.1	-	7.2
May	10.9	11.3	13.8	11.5	9.0	11.5	-	6.9n
June	10.6	11.1	13.1	11.3	8.2	11.2	-	6.9n
July	10.5	11.1	12.9	11.6	7.8	11.0	-	5.9n
Aug.	10.6	11.1	14.3n	12.1	6.5	12.5	-	5.3
Sept.	10.4	10.9	21.2n	13.6	6.2	16.1	-	4.8n
Oct.	10.4	11.0	21.8n	13.9	5.3	17.6	-	4.7n
Nov.	10.2	10.6	15.6n	12.8	5.6	14.6	-	4.8
Dec.	10.0	10.3	14.3	11.5	5.2	13.0	-	4.9
1938 -								
Jan.	10.0	10.2	15.6	11.3	5.8	12.9	-	5.5
Feb.	9.3	10.1	15.3	11.1	6.1	12.4	-	6.0
Mar.	9.6	9.8	13.3	10.6	6.4	11.3	-	6.2
Apr.	9.3	9.6	12.5	10.6	5.9	10.7	-	5.4

1/ Prior to Aug. 22, 1936, quoted at New York.

2/ Average for 8 months.

Oleomargarine

Oleomargarine production in the first quarter of 1938 was 14.9 percent above production in the same period a year earlier. Production in March was 33.6 percent over production in the preceding month. The increased fats used were largely supplied by coconut and palm-kernel oils.

New oils appear in small amounts from time to time. Approximately 17,000 pounds of rice oil, probably imported from Japan, are reported as having been used for the first time in March.

Table 11.- Oleomargarine: Production and materials used in manufacture, United States, total January - March, monthly February and March 1937 and 1938

Item	1937 1/			1938 1/		
	Total	Feb.	Mar.	Total	Feb.	Mar.
	Jan.-Mar.			Jan.-Mar.		
	1,000	1,000	1,000	1,000	1,000	1,000
	lb.	lb.	lb.	lb.	lb.	lb.
Oleo oil	4,225	1,363	1,558	3,058	911	1,353
Oleostearine	724	225	238	796	248	264
Lard neutral	520	173	182	450	146	155
Oleo stock	425	131	160	238	72	109
Total animal	5,894	1,892	2,138	4,542	1,377	1,881
Cottonseed oil	41,307	12,848	14,644	52,699	16,792	16,327
Soybean oil	9,271	2,283	3,863	9,437	2,756	2,514
Peanut oil	862	234	321	1,079	318	525
Corn oil	504	175	148	254	41	4
Total domestic vegetable 2/	51,944	15,540	18,976	63,519	19,907	19,370
Coconut oil	17,497	5,913	5,197	20,376	6,431	9,555
Palm-kernel oil	1,491	83	960	2,685	528	1,238
Babassu oil	3,203	258	2,354	4,382	1,099	1,145
Palm oil	543	191	214	---	---	---
Rice oil 3/	---	---	---	17	---	17
Sesame oil	1	---	---	---	---	---
Total foreign vegetable 4/	22,735	6,445	8,725	27,460	8,058	11,955
Total fats and oils	80,573	23,877	29,839	95,521	29,342	33,206
Milk	17,931	5,197	6,774	21,904	6,949	7,605
Salt and other miscellaneous	4,573	1,345	1,631	5,407	1,644	1,773
Production of oleomargarine	97,527	29,234	35,994	112,106	30,669	40,961

1/ Preliminary. 2/ Ordinarily domestically produced.

3/ Bureau of the Census; probably oil imported from Japan.

4/ Not domestically produced.

Compiled and computed from reports of the Commissioner of Internal Revenue.